Patent Application for
INFLATABLE WATER SPORTS BOARD

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FIELD OF THE INVENTION

The present invention relates generally to water sports equipment. The present invention relates more particularly, though not exclusively, to an inflatable water sports board. The present invention is particularly, though not exclusively, useful for surfing. Additional possible uses for the present invention include as a life guard rescue device, a platform for water military activities, a water exercise or competition board, a windsurfing board, or as hulls for a para-sail craft.

BACKGROUND OF THE INVENTION

Water sports boards and craft have existed and been used for many years and in many forms. Types of water sports boards include the longer surfboard intended for use in a standing position, and the shorter body board used primarily in a prone or kneeling position. Such boards have been made of various materials such as wood, FIBERGLAS®, rigid plastic, styrofoam, etc. Each of these materials has advantages and disadvantages. FIBERGLAS® has the advantage of being lightweight and sturdy. However, because FIBERGLAS® is uncollapsible, a board

made of FIBERGLAS® cannot be reduced in size for storage or transport. Wood is also sturdy, but can be heavy, and is also uncollapsible. Wood is also more vulnerable to surface damage. Because of the hardness of wood and FIBERGLAS®, a user struck by a floating or flying board made of either of these materials, can suffer painful injury thereby. Rigid plastic, though less hard than wood or FIBERGLAS®, can have the same effect. Plastic is lightweight, but is somewhat less sturdy than FIBERGLAS® or wood. Styrofoam is very lightweight and not likely to cause injury by impact, but is not very durable. A disadvantage of all of these materials is that none of them is non-destructively collapsible.

Advantages of the above materials can be obtained, and disadvantages avoided, by providing an inflatable water sports board that is non-destructively collapsible for easy transport and storage, as well as durable and lightweight, and is unlikely to cause injury by impact.

There are types of inflatable water craft or boards in existence. One type of inflatable water craft has an elongate housing which has parallel top and bottom walls and a front portion which extends upwardly with respect to the water level and is at an angle with the rest of the housing. While this craft may be used for surfing, it is suitable at best only for novelty surfing. It is unsuitable for serious surfing, for several reasons. First, a person using a board for surfing will often

stand at or on the front portion of the board for additional speed and control of the board on large waves. A skilled surfer may even hang the toes of both feet over the front edge of a board, or "hang ten". However, an angled front portion on the existing type of craft prevents a user from hanging the toes of both feet over the front edge of the board, or even standing at or on the front portion of the board. Therefore, the user must stand farther back on the board, which shifts the center of gravity back and causes the board to slow down or "snowplow" in the water. Furthermore, if a user were to stand on the angled front portion, it would push or dive into the water. Thus, the angled front portion of existing craft deprives the user of much speed and control of the board.

Second, surfers paddling in the prone position have their eyes only inches above the surface of the board. In this position, a surfer needs full view in front of the board, in order to judge approaching waves when entering the water, to avoid other users approaching on waves, and to avoid hitting shallow reefs which can cause injury to both the board and the user. However, if a user is paddling in prone position on a board having an angled front portion, with eyes only inches above the surface of the board, the angled front portion blocks the view of the user. Such blockage increases the danger that a user will run into other users or into objects or other hazards.

Third, on a board that has an angled front portion, the front portion is not in contact with the water. This destroys much of the support, stability and buoyancy that the board would otherwise have if the front portion were in contact with the water. It also shifts the board's center of gravity, impairing its use for surfing.

Fourth, an angled front portion makes existing craft unsuitable for body boarding. If a board is used as a body board, part of the body of the user is often extended beyond the front portion of the board in order to adjust the trim of the board for best performance. In such a case, if the front portion of the board is angled, the angled front portion juts into the body of the user, causing discomfort and difficulty in using the board, and forces part of the user's body to be raised above the board instead of allowing it to lie flat and in contact with the board, thus causing there to be a gap between the board and the user's body adjacent to the angle. With part of the user's body raised above the board, both the user's stability on the board, and the user's ability to control the board, are decreased.

For these reasons and others, existing craft having an angled front portion are unsuitable for skilled surfing. Thus, there is a need for an inflatable water sports board that remedies these problems and is suitable for skilled surfing.

SUMMARY OF THE INVENTION

The present invention is an inflatable water sports board that has upper and lower parallel flexible panels that have a front end which is substantially even with the rest of the panels. The panels may be planar, in which case the front portion is parallel to the rest of the panels. Alternatively, the panels may be evenly curved, in which case the front portion is curved evenly with the panels. The panels are separated from each other by a small distance. The perimeters of the panels are connected by a sidewall adherent to the perimeters all the way around the perimeters. The panels and sidewall enclose an inflatable space. Drop stitches connect the panels throughout the inflatable space. An inflation port is installed in one of the panels for inflation of the space. When the space is inflated, air pressure in the space pushes the panels outward against the restraint of the stitching, rigidifying the panels sufficiently to support an adult human, while maintaining a shape suitable for use in surfing. The stitching keeps the panels from separating from each other more than the length of each stitch. The surface of the inflated board remains sufficiently elastic to be unlikely to cause injury by impact. The board may include an attached leash with bracelet for retention. The space can be deflated by opening the port and expelling the air. When the space is deflated, the flexibility of the panels allows the board to be rolled up or folded for easy transport

or storage. The board may also include fins, a window, water-cutting edges, handles, and/or indentations in the outside surface of the lower panel that trap air bubbles to decrease friction between the lower panel and the water.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features of this invention, as well as the invention itself, both as to its structure and its operation, will be best understood from the accompanying drawings, taken in conjunction with the accompanying description, in which similar reference characters refer to similar parts, and in which:

Figure 1 is a perspective view of the Inflatable Water Sports Board of the present invention, with planar panels;

Figure 2 is a cross-sectional view of the Inflatable Water Sports Board of the present invention, taken across line 2 -2 of Figure 1, showing the stitching across the inflatable space; and

Figure 3 is a side view of an alternative embodiment of the Inflatable Water Sports Board of the present invention, showing curved panels.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

A preferred embodiment of the Inflatable Water Sports Board of the present invention is shown in Figures 1 and 2, and generally designated 100. Figure 1 shows Board 100 in a body board style typically shorter than a longer surfboard.

Alternatively, board 100 may be in a longer surfboard style, or any other shape suitable for a water craft or sports board. Board 100 has a flexible upper panel 102, a flexible lower panel 104, a sidewall 106 having an upper lengthwise perimeter 107 and a lower lengthwise perimeter 109, a leash 108 with a bracelet (or anklet) 110, an inflation port 112 in upper panel 102, an air chamber (or inflatable space) 114 enclosed by panels 102 and 104 and sidewall 106, adhesive 116 binding sidewall 106 to the perimeters of panels 102 and 104, wherein sidewall 106 overlaps the perimeter of each panel by an overlap distance 118, thread supports 120 between panels 102 and 104, a front portion 124, a rear portion 126, and side portions 128.

Panels 102 and 104 are made of flexible material. The flexible material may be polyurethane, polyvinyl chloride (PVC), or HYPALON®. Alternatively, the flexible material may comprise neoprene, other rubber, other vinyl, or other material having comparable flexibility and strength. Each of panels 102 and 104 may be roughly rectangular or elliptical in shape. Each of panels 102 and 104 may alternatively be of other round or angular shape, or partly round and partly angular; they may be polygonal or even polygramal. Upper panel 102 has an upper panel perimeter 132. Lower panel 104 has a lower panel perimeter 134. Each of upper panel perimeter 132 and lower panel perimeter 134 may be curved, linear or angular. The shape of

upper panel 102 may be substantially the same as the shape of lower panel 104, as shown in Figure 1. Alternatively, the shape of upper panel 102 may differ from the shape of lower panel 104.

Panels 102 and 104 are adjacent and substantially face each other. As shown in Figures 1 and 2, panels 102 and 104 may be substantially parallel to each other. Panels 102 and 104 may be substantially planar. Alternatively, panels 102 and 104 may be substantially evenly curved from front portion 124 to rear portion 126, or from one side portion 128 to the other, or both. As yet other alternatives, either or both of panels 102 and 104 may be substantially curved, or substantially planar, or partly curved and partly planar. Each point of upper panel 102 is separated from each adjacent point of lower panel 104 by a separation distance 136. In Figures 1 and 2, separation distance 136 is shown as substantially constant. Alternatively, separation distance 136 may vary, such that at least portions of panels 102 and 104 be not substantially parallel to each other. As an additional alternative, at one or more points on panels 102 and 104, separation distance 136 may be zero, depending on the desired shape of board 100. For example, the perimeters of panels 102 and 104 may taper together such that one or more sides of board 100 taper. As yet other alternatives, surfaces of panels 102 and 104 may be curved, peaked or dimpled.

Panels 102 and 104 have front portion 124. As shown in Figure 1, front portion 124 is substantially even with the rest of panels 102 and 104. If panels 102 and 104 are substantially planar, then front portion 124 is substantially parallel to the rest of panels 102 and 104. Referring briefly to Figure 3, a side view of an alternative embodiment of the Inflatable Water Sports Board of the present invention is shown and generally designated 300. In embodiment 300, panels 102 and 104 are substantially evenly curved from front portion 124 to rear portion 126. As shown in Figure 3, front portion 124 is curved substantially evenly with the rest of panels 102 and 104. It is also possible that one of panels 102 and 104 be substantially planar while the other be substantially curved. In such a case, each part of front portion 124 is substantially even with the contiguous portion of panel 102 or 104.

Referring back to Figure 1 again, because front portion 124 is even with panels 102 and 104, a user can stand at or on front portion 124, thus allowing the user maximum speed and control of the board. Also, front portion 124 is generally in contact with the water when most of the rest of lower panel 104 is in contact with the water. This increases the support, stability and buoyancy that board 100 provides to the user. Also, the fact that front portion 124 is even with panels 102 and 104, allows the user greater visibility in front of board 100 so as to better

avoid hazards while paddling or resting prone on board 100. These advantages represent great improvements over prior art in inflatable water sports boards and the like which may be used for surfing.

Thread supports 120 run between panels 102 and 104 throughout the areas of panels 102 and 104. Thread supports 120 may be drop stitches. The stitches may be made in zig-zag patterns across the surfaces of panels 102 and 104. The patterns may be parallel to each other. Patterns of the stitches may alternatively be diamond-shaped, criss-cross, trapezoidal, triangular, polygonal, polygramal, angular, curved, linear, or random.

The outer surface of lower panel 104 may have indentations in it. These indentations may be formed by thread supports 120. The indentations may be in the patterns made by thread supports 120. These indentations may trap air bubbles between lower panel 104 and the water. Board 100 moving over these bubbles may experience reduced friction between lower panel 104 and the water due to these bubbles. This action may be similar to that of ball bearings in a machine or rollers on a conveyor belt.

As shown in Figure 2, thread supports 120 may be substantially parallel to each other. Alternatively, thread supports 120 may be angled to each other. Thread supports 120 may comprise nylon or cotton or other fibrous or polymeric

material. Each of panels 102 and 104 and/or sidewall 106 may optionally be overlaid with one or more other layers of flexible material to form a laminate(s) enclosing portions of thread supports 120 that may be outside chamber 114. Such other layer(s) of flexible material may also be applied to increase strength or durability of board 100. Such other layer(s) of flexible material may be sprayed on as an overcoat, or may be applied in sheet form and bonded by means well known in the art. Any other part of board 100 may also have another layer of flexible material applied to at least of portion of it. Any of the flexible materials used in board 100 may be translucent or opaque. Also, any part of board 100 may comprise a UV-protective substance to prolong the life of board 100. The UV-protective substance may be applied to any part of board 100 by coating or spraying or other means known in the art. Alternatively, any material used to make any part of board 100 may be impregnated with the UV-protective substance.

Figures 1 and 2 show sidewall 106 as a band running all the way around the perimeters of panels 102 and 104. Sidewall 106 may be planar, curved, angular, or partly angular and partly curved. Sidewall 106 can comprise the same or different materials as panels 102 and/or 104. Upper lengthwise perimeter 107 overlaps the perimeter of upper panel 102 by overlap distance 118, all the way around the perimeter of upper panel 102. Lower lengthwise perimeter 109

overlaps the perimeter of lower panel 104 by overlap distance 118, all the way around the perimeter of lower panel 104. Sidewall 106 may also have end perimeters (not indicated in Figures 1 and 2) that overlap each other. As shown in Figure 2, the overlaps are sealed by adhesive 116. The overlaps may alternatively be sealed by heat, pressure, etc. Sidewall 106 has a width equivalent to separation distance 136 plus two times overlap distance 118. The width of sidewall 106 may be constant as shown in Figure 1, or it may vary with separation distance 136 at the perimeters of panels 102 and 104.

As shown in Figure 1, rear portion 126 may be concave or cleft. This shape of rear portion 126 may be referred to as a "swallow-tail." Alternatively, rear portion 126 may be convex, peaked, straight, or partly curved and partly angular.

Panels 102 and 104 and sidewall 106 enclose air chamber 114. Thread supports 120 run between panels 102 and 104 throughout air chamber 114. Inflation port 112 is installed in either upper panel 102 or lower panel 104 to allow introduction of compressed air into chamber 114. Inflation port 112 may alternatively be placed in sidewall 106. When air pressure in chamber 114 exceeds air pressure outside chamber 114, the air pressure differential rigidifies panels 102 and 104, while each thread support 120 upwardly limit separation distance 136 to the length of each thread support 120 between the points of panels 102 and 104

intersected by each thread support 120. If air pressure in chamber 114 is in a range from approximately ten pounds per square inch (10 p.s.i.) to approximately fifteen pounds per square inch (15 p.s.i.), board 100 rigidly supports an adult person and substantially retains its shape, yet remains sufficiently elastic that if board 100 hits a person or thing it is little likely to cause injury. If air pressure in chamber 114 is greater than approximately fifteen pounds per square inch (15 p.s.i.), the rigidity of board 100 is even greater, yets still remains more elastic than FIBERGLAS®, wood, rigid polymer or other materials having comparable rigidity. Thread supports 120 are spaced closely enough to control the shape of panels 102 and 104. Generally the more closely thread supports 120 are spaced, the more planar panels 102 and 104 are. Thread supports 120 may alternatively be more widely spaced to cause panels 102 and/or 104 to be curved, peaked or dimpled when inflated.

Board 100 may have leash 108 with bracelet 110 attached so that the user does not lose board 100 if the user falls off or lets go of board 100. Leash 108 may be attached to panel 102 or 104 or sidewall 106 or inflation port 112.

Board 100 can be deflated by opening port 112 and expelling the air from chamber 114. When board 100 is deflated, the flexibility of panels 102 and 104 allows board 100 to be rolled up or folded for easy transport or storage.

DETAILED DESCRIPTION OF ALTERNATIVE EMBODIMENTS

As shown in Figure 1, board 100 may have a window 140 (shown in phantom line) in panels 102 and 104. Window 140 may comprise clear plastic. Alternatively, window 140 may comprise plexiglas, other translucent polymer, glass, or other translucent material durable in water and in the presence of human contact. As another alternative, board 100 may have more than one window 140. Window 140 may be useful for viewing fish, for locating lost objects, or for locating drowning victims.

As shown in Figures 1-3, board 100 may have one or more fins 150 on lower panel 104. Fins 150 may be adjacent rear portion 126. Fins 150 may be elastomeric. Fins 150 may comprise an elastomer such as a urethane. Alternatively, fins 150 may comprise another rubber, or another polymer. Fins 150 may be attached to board 100 by means of cementing or vulcanization or other attaching means well known in the art.

As shown in Figures 1-3, board 100 may have water-cutting edges 160, each along a portion of either side portion 128 adjacent rear portion 126 and adjacent lower panel 104. Each edge 160 may be formed by material integral with one or more fins 150. Alternatively, any edge 160 may be formed by material separate from any fin 150. Each edge 160 may be elastomeric. Each edge 160

may comprise an elastomer such as a urethane. Alternatively, each edge 160 may comprise another rubber, or another polymer. Each edge 160 may be attached to board 100 by means of cementing or vulcanization or other attaching means well known in the art. Each edge 160 may have an angle of approximately ninety (90) degrees. Alternatively, the angle of any edge 160 may be greater or less than 90 degrees. As another alternative, the angle of any edge 160 may vary along the length of the edge 160. Edges 160 may help a user of board 100 have improved control of board 100 by "cutting" the water. Edges 160 can particularly help a user of board 100 on the wave face when crossing an unbroken wave, similarly to the edges of a snow ski traversing a snow-covered slope.

As shown in Figures 1-3, board 100 may have one or more handles 170 Each handle 170 may be attached to upper panel 102 or sidewall 106 or both. Each handle 170 may be attached adjacent one of side portions 128. Alternatively, one or more handles 170 may be attached to lower panel 104, or adjacent front portion 124 or rear portion 126. Each handle 170 may comprise braided nylon rope. Alternatively, handles 170 may comprise other fibrous or polymeric material of similar strength. Handles 170 may be attached by means of cement, heat, pressure, a knot through a hole in a panel 102 or 104 or in sidewall 106, or any combination of these, or by other means well known in the art. Handles 170 may

be useful for persons to hold onto, in connection with water rescue, for example.

As shown in Figures 1 and 3, board 100 may have one or more pockets or pouches 180 for stowing gear. Each pouch 180 may be made of nylon. Alternatively, each pouch 180 may be made of the same material as panel 102 or 104. If a pouch 180 is made of nylon, it may be 400 dernier or heavier. However, if desired, the nylon may be lighter than 400 dernier. Each pouch 180 may be placed on upper panel 102. However, if so desired, any pouch 180 may be placed anywhere else on board 100. Each pouch 180 may be sewed or glued onto board 100, or attached by other means known in the art. Alternatively, any pouch 180 may be formed integrally with a part of board 100, such as panel 102 or 104 or sidewall 106. Each pouch 180 may have a closure made of hook-and-loop (e.g., VELCRO®) material, snaps, zippers, buttons, ties, or other closure means known in the art.

As shown in Figures 1-3, board 100 may have a canister 190 for holding compressed gas which may be used to inflate board 100. Canister 190 can be useful for inflating board 100 rapidly or without a pump, such as in a remote location or in an emergency situation. The compressed gas can be CO_2 or other compressed gas suitable for inflating an inflatable board, which gases are well known in the art.

While the particular Inflatable Water Sports Board as herein shown and disclosed in detail is fully capable of obtaining the objects and providing the advantages herein before stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as described in the appended claims.